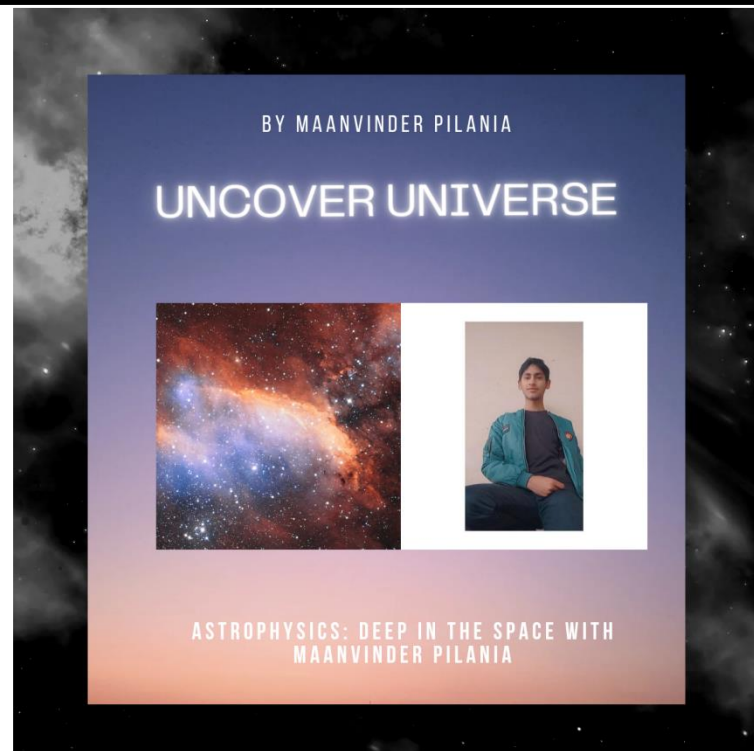


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Why the Night Sky is Dark?



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OLBERS PARADOX: WHY THE NIGHT SKY IS DARK?

Hi & welcome to the 365 Days of Astronomy. I'm Maanvinder Pania. Today I will tell you about the Olbers Paradox.

Looking up at the night sky, have you ever wondered why the night sky appears dark? Any explanation, I've got two explanations for you.

Maybe you have never thought about that because what most of the people thinks about the darkness of night is that the Sun has set so there's no brightness in the sky.

But is it the right explanation behind the darkness of night sky or there might be another explanation? I used to think what most of the common people thinks about the darkness of night sky until I came to know the exact reason behind the darkness.

The question about why night sky is dark has been posed by many physicists and philosophers over the millennia.

Heinrich Olbers, an German Astronomer gave an explanation about why night sky appears dark in the year 1823.

The Dark Sky Paradox or Olbers Paradox named after Heinrich Olbers explains why despite having infinite number of stars in the Universe, the night sky appears dark.

According to the Big Bang theory, the Universe is 13.8 billion years old and was very dense and hot at the time of its birth. After few hundred thousand years, first stars came into existence.

The Universe was glowing at the time of birth of first stars. The dark universe got its own light bulbs- "the stars". In every direction the sky was as bright as the surface of a star. So the main question is what caused our night sky to look black.

In the 1920s, through his observations Edwin Hubble discovered that Universe is not static. It is expanding. Galaxies are speeding away from us in all directions and one day we will never be able to see stars in our night sky.

Here's one solution to this paradox. The reason behind the darkness of night sky comes down to the physics of light.

The Speed of light is finite and it takes time to travel from one place to another in cosmos. We don't see stars in every direction because many stars haven't been around long enough for their light to get to us.

There's also another solution to the paradox. Who knew that a paradox could have two solutions?

Light is an electromagnetic radiation. As the universe expanded, the initial visible light was stretched out to the wider end of the electromagnetic spectrum from visible light to until they became microwave.

We call these microwave wavelengths as Cosmic Microwave Background. It was discovered in 1965. It is the proof of Big Bang that it really happened.

So even if you can't see infinite number of stars in your sky, still your eye sight land on any part of sky is bright as the surface of a star.

So conclusion is that Olbers was right. If you look in any direction every small patch of the night sky is as bright as the surface of a star.

We don't see it because visible light has stretched out the end of electromagnetic spectrum from visible light to microwave part of the electromagnetic spectrum. Further the Universe expands, further it redshift the light.

Now you have got to know what causes the night sky dark. If someone asks you ever again about why night sky is dark, don't tell them it's because Sun has set. Tell them that it's because our Universe is expanding and due to expansion of universe, the visible light has stretched out to microwave part, which you can't see.

Thank you for listening; this is 365 Days of Astronomy.

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